

## SEAT

### BACKGROUND OF THE INVENTION

The present invention relates to a seat,  
5 particularly to a vehicle seat in which a pad assembly is covered with a cover assembly.

In a vehicle seat such as a front seat of a vehicle in the related art, side portions contiguous to the opposite sides of a main portion that is interposed  
10 between the side portions are formed as somewhat high banks. A method using pulling wires as shown in Figs. 5 and 6 prevails in covering of such a seat. In this case, a cover assembly 11 having side portions 11a and a main portion 11b seamed together in their boundary portions is  
15 put over a pad assembly 12. Thus, a vehicle seat is formed.

In such a vehicle seat, each bank-like side portion is higher than the main portion. Therefore, unless the boundary portions (concave shapes) between the side  
20 portions 11a and the main portion 11b of the cover assembly 11 and the intermediate portion of the main portion 11b are fixed, the cover assembly 11 may rise away from the pad assembly 12 in the boundary portions and in the intermediate portion. Thus, the exterior appearance  
25 may be degraded. To prevent such a problem, the following

structure is adopted.

That is, Fig. 5 is a perspective view of a seat viewed from above the seat (from the front side) for explaining a vehicle seat covering method in the related art, and Fig. 6 is a perspective view of the arrangement of end wires viewed from above the seat (from the front side).

In the pad assembly 12, boundary-portion pulling slots 12c and 12c for pulling the cover assembly 11 are formed in the boundary portions between the opposite side portions 12a and the main portion 12b so as to extend in the front/rear direction, while a main-portion pulling slot 12d is formed in the intermediate portion of the main portion 12b so as to extend in a direction crossing the boundary-portion pulling slots 12c and 12c.

Boundary-portion insert wires 16 and 16 and a main-portion insert wire 17 are embedded in the bottom portions of the pulling slots 12c, 12c and 12d respectively.

On the other hand, boundary-portion pulling bags 11c and 11c and a main-portion pulling bag 11d each having a cylindrical shape are sewn on the back of the cover assembly 11.

The boundary-portion pulling bags 11c and 11c are pulled into the boundary-portion pulling slots 12c and 12c of the pad assembly 12, while the main-portion pulling bag

11d is pulled into the main-portion pulling slot 12d of the pad assembly 12.

The boundary-portion pulling bags 11c and 11c are sewn and paired left and right to be located in the boundary portions between the opposite side portions 11a and the main portion 11b in the cover assembly 11 respectively. Each of the left and right boundary-portion pulling bags 11c and 11c is divided into two in the front/rear direction of the seat.

Boundary-portion end wires 14 and 15 shown in Fig. 6 and corresponding to boundary-portion insert wires 16 and 16 are inserted into the divided pieces of each of the left and right boundary-portion pulling bags 11c and 11c.

On the other hand, a main-portion end wire 13 shown in Fig. 6 and corresponding to the main-portion insert wire 17 is inserted into the main-portion pulling bag 11d.

The vehicle seat is assembled as follows. That is, the cover assembly 11 is put over the surface of the pad assembly 12. Then, the boundary-portion pulling bags 11c and 11c having the boundary-portion end wires 14 and 15 inserted thereto on the opposite sides are pulled into the boundary-portion pulling slots 12c and 12c of the pad assembly 12. On the other hand, the main-portion pulling bag 11d having the main-portion end wire 13 inserted thereto is pulled into the main-portion pulling slot 12d

of the pad assembly 12. Then, the boundary-portion end wires 14 and 15 on the opposite sides are fixed to the boundary-portion insert wires 16 and 16 of the pad assembly 12. On the other hand, the main-portion end wire 13 is fixed to the main-portion insert wire 17 of the pad assembly 12.

The fixation of the wires 13, 14 and 15 to the wires 17, 16 and 16 is performed by pullingpulling hog rings 18 such as C-rings on the insert wires 17, 16 and 16 corresponding to the end wires 13, 14 and 15 as shown by the arrows in Fig. 5. When the hog rings 18 are used, each end wire 13, 14, 15 and each insert wire 17, 16, 16 are fixed at a plurality of places in their length direction because of the necessity of preventing the cover assembly 11 from rising away from the pad assembly 12. In Fig. 5, fixation on each boundary-portion insert wire 16, 16 is performed at four places, and fixation on the main-portion insert wire 17 is performed at two places. Thus, fixation is performed at 10 places in total.

Such a technique in the related art has the following problems.

A complicated configuration as described above is required for preventing the cover assembly from rising away from the pad assembly in the boundary portions

(concave shapes) between the main portion and the side

portions of the seat.

Recently, in order to improve the exterior appearance of the seat, there is a tendency to make the bank portions higher, make the pulling slots deeper  
5 (deeper pullingpulling) and make the pulling slot narrower. Thus, the workability in pullingpulling and fixation using a hog ring gun, that is a tool for the hog rings, becomes worse and worse.

Thus, there is a problem that the cost and the  
10 weight increases due to a large number of complicated constituent parts for pullingpulling, and the number of man-hours for the work of pullingpulling is large.

#### SUMMARY OF THE INVENTION

15 In order to solve such problems, it is an object of the invention to provide a vehicle seat in which the number of constituent parts for pullingpulling and the number of man-hours in the work of pullingpulling are reduced with a simple mechanism, and a cover assembly of  
20 the seat covers a pad assembly in close contact therewith and along the shape thereof, so that the exterior appearance of the vehicle seat is attractive.

In order to solve the problems, according to the invention, there is provided a seat comprising:

25 a pad assembly having a main portion and side

portions, the main portion interposed between the side portions, the side portions including boundary-portion pulling slots wherein boundary-portion insert wires are disposed along bottom portions of the boundary-portion

5 pulling slots, and the main portion including a main-portion pulling slot disposed substantially perpendicular to the boundary-portion pulling slots;

a cover assembly covering a surface of the pad assembly, the cover assembly including boundary-portion  
10 pulling bags pulled into the boundary-portion pulling slots respectively and a main-portion pulling bag pulled into the main-portion pulling slot, wherein boundary-portion end wires are inserted into the boundary-portion pulling bags and fixed to the boundary-portion insert  
15 wires respectively; and

a main-portion end wire inserted into the main-portion pulling bag, the main-portion end wire having opposite end portions bent, the main-portion end wire being placed into the main-portion pulling slot with the  
20 bent opposite end portions linked with the boundary-portion end wires respectively.

Further, each of the boundary-portion end wires to be inserted into the boundary-portion pulling bags is a single wire.

25 Further, the main-portion end wire hangs the main-

portion pulling bag into the main-portion pulling slot by bending reaction force generated by bending the opposite end portions of the main-portion end wire.

Further, the main-portion end wire is made from an  
5 elastic material.

Further, according to the invention, there is provided another vehicle seat including: a pad assembly having a plurality of pulling slots extending in directions crossing one another; and a cover assembly  
10 having a plurality of pulling bags to be pulled into the pulling slots correspondingly and respectively so that the cover assembly covers a surface of the pad assembly; wherein insert wires are embedded in bottom portions of the pulling slots except at least one pulling slot, while  
15 end wires are inserted into all of the pulling bags respectively; and wherein opposite end portions of the end wire to be inserted into the pulling bag to be pulled into the at least one pulling slot are bent, the bent opposite end portions are linked with the end wires of the pulling  
20 bags to be pulled into the pulling slots other than the at least one pulling slot, and when the end wire with the bent opposite end portions linked is forced into the at least one pulling slot, the pulling bag having the end wire inserted thereto is pulled into the at least one  
25 pulling slot.

## BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of the back side of a cover assembly of a vehicle seat using a main-portion end wire according to an embodiment of the invention;

Fig. 2 is an enlarged view of the portion A in Fig. 1;

Fig. 3 is a perspective view of the vehicle seat using the main-portion end wire according to the embodiment of the invention viewed from above the seat (from the front side), for explaining a covering method of the vehicle seat;

Fig. 3A is a perspective view of a boundary-portion insert wire in the vehicle seat according to a modification of the embodiment of the invention;

Fig. 4 is a perspective view of the arrangement of end wires in the vehicle seat using the main-portion end wire according to the embodiment of the invention, viewed from above the seat (from the front side);

Fig. 4A is a perspective view of the arrangement of end wires in the vehicle seat using the main-portion end wire according to a modification of the embodiment of the invention, viewed from above the seat (from the front side);

Fig. 5 is a perspective view of a vehicle seat



viewed from above the seat (from the front side) for explaining a covering method using pulling wires in the related art; and

Fig. 6 is a perspective view of the arrangement of end wires in the vehicle seat using the pulling wires in the related art, viewed from above the seat (from the front side).

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

A preferred embodiment of the invention will be described below in detail with reference to the accompanying drawings.

Fig. 1 is a perspective view of the back side of a cover assembly of a vehicle seat according to an embodiment of the invention, and Fig. 2 is an enlarged view of the portion A in Fig. 1.

Fig. 3 is a perspective view of the vehicle seat according to the invention viewed from above the seat (from the front side), for explaining a covering method of the vehicle seat. Fig. 4 is a perspective view of the arrangement of end wires in the vehicle seat according to the invention viewed from above the seat (from the front side).

The vehicle seat according to the embodiment of the invention shown in Figs. 1 to 4 is constructed in a

covering method using pulling wires substantially the same as that in the related-art seat, except the configuration of a main-portion pulling slot portion in a main portion of the seat. That is, the vehicle seat constituted by  
5 side portions formed into somewhat high banks on the opposite sides and a main portion between those side portions has a structure in which a cover assembly 1 having side portions 1b and a main portion 1a sewn in their boundary portions is put over the surface of a pad  
10 assembly 2.

In the pad assembly 2, boundary-portion pulling slots 2c and 2c for pulling the cover assembly 1 are formed in the boundary portions between the opposite side portions 2a and the main portion 2b so as to extend in the  
15 front/rear direction, while a main-portion pulling slot 2d is formed in the intermediate portion of the main portion 2b so as to extend in a direction crossing the boundary-portion pulling slots 2c and 2c.

Boundary-portion insert wires 6 and 6 are embedded  
20 in the bottom portions of the boundary-portion pulling slots 2c and 2c on the opposite sides respectively.

On the other hand, boundary-portion pulling bags 1c and 1c and a main-portion pulling bag 1d each having a cylindrical shape are sewn on the back of the cover  
25 assembly 1.

The boundary-portion pulling bags 1c and 1c are pulled into the boundary-portion pulling slots 2c and 2c of the pad assembly 2, while the main-portion pulling bag 1d is pulled into the main-portion pulling slot 2d of the  
5 pad assembly 2.

The boundary-portion pulling bags 1c and 1c are sewn and paired left and right to be located in the boundary portions between the opposite side portions 1a and the main portion 1b in the cover assembly 1 respectively. A  
10 portion corresponding to the main portion in the front/rear portion of the seat is cut off from each of the left and right boundary-portion pulling bags 1c and 1c. Thus, cut portions 1cx are provided.

Boundary-portion end wires 4 and 4 shown in Figs. 1 to 4 and corresponding to boundary-portion insert wires 6 and 6 are inserted into the left and right boundary-portion pulling bags 1c and 1c cut thus, respectively. A single wire is used as each of the boundary-portion end wires 4 and 4.  
15

On the other hand, a main-portion end wire 3 shown in Figs. 1 to 4 and corresponding to the main-portion pulling slot 2d is inserted into the main-portion pulling bag 1d.  
20

The main-portion end wire 3 is constituted by a straight body portion 3c, and hook-like link portions 3a  
25

provided contiguous to the opposite ends of the body portion 3c through bent portions 3b respectively. The main-portion end wire 3 is disposed to cross the boundary-portion end wires 4 and 4. The link portions 3a on the  
5 opposite ends of the main portion end wire 3 are pulled on the boundary-portion end wires 4 and 4 respectively. Thus, the main portion end wire 3 is linked with the boundary-portion end wires 4 and 4.

In the bent portions 3b, the opposite end portions  
10 of the main-portion end wire 3 are bent at a suitable angle toward the back side of the main portion 1a of the cover assembly 1. Thus, the body portion 3c is located on the side of the bottom portion of the main-portion pulling slot 2d of the pad assembly 2.

15 This is the most essential point of the invention having the following function/effect.

That is, it is not necessary to fix the main-portion end wire 3 to the main-portion insert wire as in the related art. Only if the main-portion end wire 3 is  
20 forced into the main-portion pulling slot 2d with the opposite ends of the main-portion end wire 3 regulated by the link portions 3a, the main-portion pulling bag 1d can be pressed and brought into close contact with the bottom portion of the main-portion pulling slot 2d due to bending  
25 reaction force generated in the bent portions 3b. Thus,

the main-portion pulling bag 1d can be pulled into the main-portion pulling slot 2d.

Consequently, the width of the pulling slots can be reduced to improve the exterior appearance of the seat.

5 In addition, the work of fixation using hog rings which may deteriorate the workability when the pulling slots are made deep can be reduced to the utmost.

In order to make the effective use of the bending reaction force, it is desired that the main-portion end  
10 wire 3 is made from an elastic material such as a spring material having rigidity high enough not to be deformed permanently when it is pulled.

As shown in Figs. 1 and 2, the cut portion 1cx of each boundary-portion pulling bag 1c is disposed to expose  
15 the link portion 3a where the boundary-portion end wire 4 links with the main-portion end wire 3 of the main portion. Thus, the boundary-portion end wires 4 can be linked with the main-portion end wire 3 easily from the outside.

The vehicle seat according to the invention is  
20 assembled as follows. That is, the cover assembly 1 is put over the surface of the pad assembly 2. Then, the boundary-portion pulling bags 1c and 1c having the boundary-portion end wires 4 and 4 inserted thereto on the opposite sides are pulled into the boundary-portion  
25 pulling slots 2c and 2c of the pad assembly 2. On the

other hand, the main-portion pulling bag 1d having the main-portion end wire 3 inserted thereto is pulled into the main-portion pulling slot 2d of the pad assembly 2. Then, the boundary-portion end wires 4 and 4 on the  
5 opposite sides are fixed to the boundary-portion insert wires 6 and 6 of the pad assembly 2. On the other hand, the main-portion end wire 3 is forced into the main-portion pulling slot 2d of the pad assembly 2.

The fixation of the boundary-portion end wires 4 and  
10 4 to the boundary-portion insert wires 6 and 6 is performed by pulling hog rings 8 such as C-rings on the boundary-portion insert wires 6 and 6 corresponding to the boundary-portion end wires 4 and 4 as shown by the arrows in Fig. 3. When the hog rings 8 are used, each boundary-  
15 portion end wire 4, 4 and each boundary-portion insert wire 6, 6 are fixed at a plurality of places in their length direction because of the necessity of preventing the cover assembly 1 from rising away from the pad assembly 2. In Fig. 3, fixation on each boundary-portion  
20 insert wire 6, 6 is performed at four places. Thus, fixation is performed at 8 places in total.

That is, according to the embodiment, the cover assembly 1 is pulled in the boundary portions, with a boundary-portion end wire 4, 4 continuous as a single wire  
25 on each of opposite sides and linking with the link

portion 3a, 3a at each of opposite ends of the main-  
portion end wire 3. In the related-art structure, however,  
each boundary-portion end wire on each of opposite sides  
is divided into two and has no linkage with the main-  
5 portion end wire. Incidentally, it is in the same manner  
as in the related art that each boundary-portion end wire  
4 is fixed to the boundary-portion insert wire 6 at a  
plurality of places by means of the hog rings 8.

As described above in detail, according to the  
10 embodiment, excellent effect unknown in the related art is  
shown as follows.

As for the number of parts for pulling the cover  
assembly, for example, in the case where one main-portion  
pulling slot is provided in the seat main portion, in  
15 comparison with the related-art method, the number of end  
wires is reduced from 5 in the related art to 3 in the  
invention; the number of insert wires is reduced from 3 in  
the related art to 2 in the invention; and the number of  
hog rings is reduced from 10 in the related art to 8 in  
20 the invention. Thus, according to the invention, the  
number of man-hours and the weight for the work of pulling  
can be reduced while the cost can be reduced (improvement  
of working efficiency and economical efficiency, and  
reduction in weight).

25 Although the embodiment described above shows an

example in which one main-portion pulling slot portion is provided, it is a matter of course that two or more main-portion pulling slot portions may be provided in accordance with necessity.

5       Further, although in the embodiment described above each of the left and right boundary-portion hander bags 1c and 1c has a cut portion 1cx, it is possible to modify it in such a manner that that each of the left and right boundary-portion hander bags 1c and 1c is divided into two  
10 in the front/rear direction of the seat as shown in Fig. 5.

      Furthermore, although in the embodiment described above each of the boundary-portion insert wires 6, 6 is made from a single wire, it is possible to modify it in such a manner that both of the boundary-portion insert  
15 wires 6, 6 are made from a U-shaped single wire 6A as shown in Fig. 3A. Accordingly, the number of insert wires can be reduced.

      Moreover, although in the embodiment described above each of the boundary-portion end wires 4, 4 is made from a  
20 single wire an intermediate portion of which is connected with the mine-portion end wire 3, it is possible to modify it in such a manner that each of the boundary-portion end wires 4, 4 is made from boundary-portion end wires 14 and 15 as shown in Fig. 4A.

25       While there has been described in connection with the



preferred embodiment of the invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention, and it is aimed, therefore, to cover in the  
5 appended claim all such changes and modifications as fall within the true spirit and scope of the invention.

As described above in detail, according to the invention, excellent effect unknown in the related art is shown as follows.

10 Even when pulling slots are made deep and narrow for improving the attractive appearance, particularly the main-portion insert wire and the fixation thereto using hog rings can be dispensed with in the invention. Accordingly, in the main portion, the work of pulling is  
15 made easier by pulling with the main-portion end wire having a bent shape, while there is no intensive pulling in any fixation portion using a hog ring. Thus, uniform finishing can be attained. In other words, improvement of workability and exterior appearance can be seen.

20 With the present invention, the number of parts for pulling the cover assembly can be reduced. Particularly, for example, in the case where one main-portion pulling slot is provided in the seat main portion, in comparison with the related-art method, the use of the main portion  
25 insert wire can be eliminated, so that the number of hog

rings can decrease. Thus, according to the invention, the number of man-hours and the weight for the work of pulling can be reduced while the cost can be reduced by improvement of working efficiency and economical  
5 efficiency, reduction in weight, and so on.